Effect of Bilateral Training Program on Reading Motivation and Reading Motivation Program on Reading Skills: A Systematic Review of the Literature

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Abstract

This research employed meta-analysis procedures to summarize eleven reading motivation studies from 1998 to 2012. These eleven studies were experimental and quasi-experimental in nature. The total participants were 3360 students from the elementary, secondary and high schools. The average total sample size ranged from 16 to 568 for the experimental group and 6 to 940 for the control group. The data were analyzed using meta-analysis software. The odds ratio, Q statistics for heterogeneity, and effect size estimates were also analyzed. The odd ratios show the effectiveness of the intervention programs on the outcomes of the students' reading and reading motivation.

Keywords: achievement theory, dyslexic learners, engagement theory, learning disability, reading motivation

Introduction

The subject of motivation became an issue particularly throughout the 1980s when a number of models and theories were proposed. The ancient interest in reading motivation and its implications in learning has remained strong especially in the areas of reading success (Gambrell & Morrow, 1996; Wigfield & Guthrie, 1997b). The conceptualizations and definitions of motivation are various; nevertheless, numerous relevant commonalities can be found between them. According to Guthrie and Wigfield (1999), motivation researchers are concerned with what progress people have. Motivation is related to the initiation, direction, intensity and persistence of behavior (Geen, 1995). From a broad perspective, it is defined as "an internal state that arouses, directs, and sustains a person's behavior" (Glynn, Aultman, & Owens, 2005 p.150).

In terms of motivation, proficient readers are highly motivated people who are constantly and energetically eager to read for different reasons (Guthrie, Anderson, Alao, & Rinehart, 1999). Intrinsically motivated readers, as defined by Applegate and Applegate (2004), are readers who read just for the sake of reading and take pleasure in reading for their own curiosity. Compared to other students, the intrinsically motivated readers spend more time on reading and so they achieve higher success and better scores on standardized reading tests (Applegate & Applegate, 2004). Encouraging the students to read more needs teachers' provision of extensive reading materials and the students should like to read, too. There are several parameters that contribute to literacy success in school. It was found that in successful schools, teachers spend a great portion of time on reading and reading instruction through attractive motivating reading collections (Mosenthal, Lipson, Sortino, Russ, & Mekkelsen, 2002).

However, it is quite challenging to motivate dyslexic students to read for fun and continuous learning. Gambrell, Palmer, Codling, and Mazzoni (1996) document that comparing reading motivation in poor readers and above-average readers indicates some amazing results although both groups have been identically motivated by three chief factors namely 1) choice in reading materials, 2) sharing reading aloud, and 3) receipt of affirmation or positive recognition for reading accomplishments.

With respect to motivation and reading problem, Burden and Burdett (2005) pay attention to the affective features of reading problem like the risk of decreased motivation, self- image and learned helplessness. Some other findings (e.g., Morgan, Fuchs, Compton, Cordray, & Fuchs, 2008) pointed out that students with reading problem may encounter serious challenges regarding their self-esteem and this may get worse and affect their general self-development. In their research, Burden and Burdett (2005) attempted to fill the gap in earlier studies about reading problem. They focused on the information and attitudes given by the dyslexic individuals themselves while they were giving a self-report on their difficulties and school experiences.

The researchers admitted that it was hard to deal with the self-concept of students and find an acceptable criterion to evaluate self-esteem or self-image. They also acknowledged that there were some mistakes in methodology in some studies that tried to manifest a relationship between self-esteem and achievement. It is necessary to employ a multifaceted approach to motivation. It is believed that three main features comprise the students' motivation: 1) The students' attitudes toward learning and the learning tasks. 2) Their feelings and thoughts about themselves as students. 3) Their sense of effectiveness in finding out how to eliminate problems.

Students with learning disability may appear to be unmotivated, but their lack of motivation may actually result from chronic academic failure. The process of losing motivation begins when students first doubt about their intellectual abilities. They then start to view their achievement efforts as futile, eventually asking themselves the question, "Why try if you know you are going to fail? After encountering repeated failures in the classroom, these students develop negative and defeatist attitudes about school learning. As a consequence, they have fewer opportunities to experience personal control over learning outcomes and eventually begin to doubt that they are in control of their academic destinies (McGrady, Learner, & Boscardin, 2001).

There is a relation between achievement and high motivation for reading. The motivated students usually read and write more often and as a result, they achieve success. Reading motivation includes a learner's self-concept as a reader and an evaluation of the value that readers place on the reading activity (Gambrell, et al., 1996).

Based on Linda Baker and Wigfield (1999a), theoretical positions about reading motivation are grounded in two theories. The first one is engagement theory and the second one is achievement theory. According to the engagement theory, reading includes cognitive, motivational, and social aspects of reading (Baker, Afflerbach, & Reinking, 1996; Guthrie & Alvermann, 1999; Oldfather & Wigfield, 1996). As Baker et al. (1996) maintain, the engagement theory views readers, at the same time, as motivated, strategic, knowledgeable, and socially interactive.

Engaged readers are motivated to read for such different reasons as using knowledge from earlier experience to generate new understandings, and contributing to important social communication around reading. Baker and Wigfield (1999b) modified the constructs which had been developed by investigators in the achievement motivation field in conceptualizing reading motivation. Presently, several motivation theorists believe that competence and efficacy beliefs are both intrinsic and extrinsic motivations. They also hold that the status of people tells them what decisions to make, what activities to take part in, how long to continue with those activities and how much energy to put in the activities (Eccles, Wigfield, & Schiefele, 1998; Wigfield, Eccles, & Rodriguez, 1998). According to Guthrie, et al., (1996) and Oldfather & Wigfield, (1996) motivated readers will engage further in reading.

Wigfield and Guthrie (1997a) conceptualized 11 different factors of reading motivation, and Wigfield (1997) created a theoretical taxonomy consisting of three types of reading motivation. One type of factors is based on the competence and efficacy belief constructs. This type includes self-efficacy, the belief that one is able to succeed in reading, and challenge, the willingness to get on with hard reading material. When people believe they are successful in an activity, they are more likely to engage in it (Bandura, 1997; Schunk & Zimmerman, 1997). Another factor in this type is work avoidance, or the tendency to avoid reading activities. When students lack a sense of efficacy, they probably wish to avoid challenging reading activities.

The second type concerns the goals students have for reading. The particular factors in this type include several constructs from the motivational field including intrinsic and extrinsic motivation, achievement aim orientations, and achievement values. Intrinsic motivation refers to being motivated, curious, and interested in an activity for its individual sake rather than for extrinsic causes like working for a reward (Deci & Ryan, 1985). According to Ames, (Ames, 1992) a learning aim orientation means the person focuses on mastery and improvement rather than on outperforming others. For example, Renninger, Hidi and Krapp (1992) show that curiosity is defined as the desire to read about a particular issue of interest to the student, and so is directly related to the literature on reading interest mentioned earlier. Involvement is the pleasure experienced from reading certain types of literary or informational texts. This construct is grounded in Schallert and Reed (1997) reading involvement concept as well as in the conceptions of intrinsic motivation. Importance of reading is a factor taken from Wigfield and Eccles' (1992) work on subjective task values.

There are three dimensions to the extrinsic motivation which direct one's performance aim orientation. Based on Ames (1992) and Nicholls, Cheung, Lauer and Patashnick (1989), a performance aim orientation means working primarily to carry out well in the eyes of others. The factors capturing these constructs comprise recognition, enjoyment in getting a touchable form of recognition for achievement in reading, reading for grades, desire to be favorably assessed by the educator, and competition, the desire to outperform others in reading. These different factors of motivation reflect the fact that students do their reading in school, where their reading skills are assessed and compared with others' skills. Therefore, recognition, grades, and competition may form in their motivation for reading. The third type addresses social purposes of reading. According to engagement theory, reading is intrinsically a social activity (Baker, et al., 1996; Guthrie, McGough, Bennett, & Rice, 1996) and social parts of classrooms have an essential impact on student achievement (Wentzel, 1996). One part is social causes for reading, or the process of constructing and sharing the meanings developed from reading with friends and family. The second part is compliance, or reading to meet the expectations of others. In this study, the important research question is: Does the bilateral training program improve reading motivation and does reading motivation program improve reading skills in students? In this study based on the research questions, the null hypotheses is: The bilateral training program does not improve reading motivation and reading motivation program does not improve reading skills in students.

Method

The area of relevant studies was as extensive as possible and included published studies based on search in four databases including Science Direct, Scopus, Sage, and ProQuest Online Database. A final list of the key terms for literature searches included motivation toward reading, reading intervention, reading motivation, intervention program, instruction and reading from 1998 to 2012. In addition to computerized database resources, cross-checking of references, scans of journals, contacts were made with the experts in the field to verify the truth of the literature. Studies recovered from the primary searches were screened employing the following areas:

1. The intervention included a reading intervention program or reading motivation program.
2. Study must use the pretest-posttest control-group design.
3. Study must have a control group that is compared to intervention group(s).
4. The participants must be school aged (from preschool to twelfth grade).
5. Study must have been written in English.
6. Study must have been published since 1980.
7. Study must provide sufficient statistics for computing effect size such as mean, standard deviation, and sample size for each group.

This selection identified 11 independent references used in the present meta-analysis. A total of 11 independent studies includes (Andreassen & Braten, 2011; Codling, 1998; Guthrie, Coddington, & Wigfield, 2009; Guthrie et al., 2007; Lau & Chan, 2007; Marinak & Gambrell, 2008; Mihandoost, Elias, Nor, & Mahmud, 2011; Morgan, et al., 2008; Retelsdorf, Ko¨ller, & Mo¨ller, 2011; Villiger, Niggli, Wandeler, & Kutzelmann, 2012; Wigfield, Guthrie, Tonks, & Perencevic, 2004) were used in the present meta-analysis.

Coding of studies

A number of quality reflecting potential moderators were coded for the effectiveness of intervention program of students who tend to struggle with reading. These characteristics include 1) Study design, 2) Participants, 3) Type of reading instruction, and 4) Measure of reading motivation.

Design characteristics Samples were classified as intervention or control groups. All intervention groups received some type of reading program, which was given alone or as part of a bigger intervention. Control groups included participants who received other types of program with no reading components. Samples were also coded for 1) The effectiveness of the intervention program in reading motivation, focus of the intervention studies were coded for the focus of the intervention (literacy, reading, spelling, vocabulary, or others) 2) It measured reading motivation, 3) It contained student data at the elementary, secondary and high school levels, 4) It reported experimental data.

Results

In this study, the researcher used eleven experimental and quasi-experimental studies conducted in the United States, Germany, Norway, China and Iran. They were retrieved from the internet.

The overall meta-analysis for this study shows that OR: 2.42; 95% CI: 1.80, 3.26 is statistically significant, p<.001 (see Table 1), and additionally, the Q statistics for heterogeneity of 37.97 is statistically significant, p < .001. The overall meta-analysis for the descriptive studies shows that STD paired difference: .49, standard error: .08; variance: .007; 95% CI: .32, .65, Z-Value = 5.80 and effect size estimates is .49.

The researcher also employed the funnel plot. It was introduced by Light and Pillemer (1985). It typically has a measure for effect size on the x-axis and a measure related to the within-study variance on the y-axis. Each study is represented by a single equal-sized dot (see Figure 1). Each point on the graph corresponds to one study and shows the relevant effect estimate and its precision. The precision of the estimate is measured by its estimated standard error which depends on the variability in the study and the sample size: larger samples provide more precise estimates.

Figure 1 shows the funnel plot. The points indicate the Log odds ratio from studies included in the meta-analysis; squares with horizontal lines show log odds ratio from studies with 95% confidence interval. See Table 1 for abbreviations of names of the studies.

Discussion

In this meta-analysis study, motivation toward reading was measured by a reading motivation scale. In most of the studies, motivation was positively related to reading. The variables that were related to reading motivation are self- reports, parent and teacher reports, reading achievement, literacy, and reading skills. Nearly all of them showed significant effects. There can be no doubt that motivation predicted success in school. Success in school is associated with healthy psychological functioning that is manifested in motivation which affects both reading skills and reading achievement. Confirming these results, Taboada, Tonks, Wigfield and Guthrie (2009) found that reading motivation accounted for significant and independent variance in reading skills. Lau and Chan (2003) argued that motivational factors are important for reading skill. It is possible that motivation plays a greater role in reading skills. Researchers have the same opinion that learning involves motivational processes. This has been supported in studies that show struggling students with low educational performance usually show maladaptive molds of motivation to learn, for instance, low interest, less resolution, and negative competence beliefs (Gans, Kenny, & Ghany, 2003). Educators have also expressed great concern about how to stimulate and maintain their students' motivation to learn.

They have been especially interested in how to make education more attractive to students, how to make individual and collaborative learning goals, and how to teach things that are of value to learning (Brophy, 2004). Researchers and educators have also paid attention to the role of motivation in improving students' reading abilities over the past couple of decades (Eccles, et al., 1998). However, motivation has been neglected in most significant studies and reviews that have influenced reading procedure (National Institute of Child Health and Human Development, 2000). This is regrettable because motivation certainly plays an important role in the development of reading. In addition, motivated readers spend more time reading than other students do and as a result attain a higher level of achievement and perform better on standardized reading tests (Applegate & Applegate, 2004). While understanding reading motivation is itself an important research goal, it is also vital to investigate the relationship of reading motivation to reading skills. The engagement perspective guiding this study proposes that when students are motivated to read, they are more likely to be engaged in reading and, therefore, understand better.

Conclusion

Motivation toward reading is measured by reading motivation scales, and it is related to many aspects of motivation and reading. The literature gives broad support for the validity of reading motivation scales as well as for the relevance of motivation toward reading. The present review covers many relationships and addresses specific studies on motivation in the elementary, secondary and high schools. Previous work on reading motivation research has been extended and taken to a new level of specificity hence focusing on motivation for general and specific reading.

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Table 1. Summary of Meta-Analysis for Reading Motivation

Study name	Statistics for each study					Odds ratio and 95% CI
	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	
Villiger et al, 2012	10.088	0.585	174.057	1.591	0.112	
Guthrie et al, 2007	86.111	4.222	1756.165	2.896	0.004	
Retelsdorf et al, 2011	128.932	7.897	2104.935	3.410	0.001	
Andreassen & Braten, 2011	1.769	0.844	3.709	1.511	0.131	
Wigfield et al, 2004	1.556	0.997	2.428	1.945	0.052	
Guthri et al, 2009	4.615	2.465	8.640	4.781	0.000	
Marinak & Gambrell, 2008	2.469	0.126	48.382	0.595	0.552	
Lau & Chan, 2007	15.026	0.820	275.446	1.826	0.068	
Morgan et al, 2008	234.368	13.101	4192.579	3.708	0.000	
Codling, 1998	13.000	0.628	268.926	1.659	0.097	
Mihandoost et al, 2011	1.000	0.363	2.751	0.000	1.000	
	2.422	1.796	3.264	5.804	0.000	

Table 1 demonstrates the positive effect of the results, odd ratio [OR]: 2.42, 95% confidence interval [CI]: 1.80, 3.26, Z-Value = 5.80 and p-value is, $p < .001$.

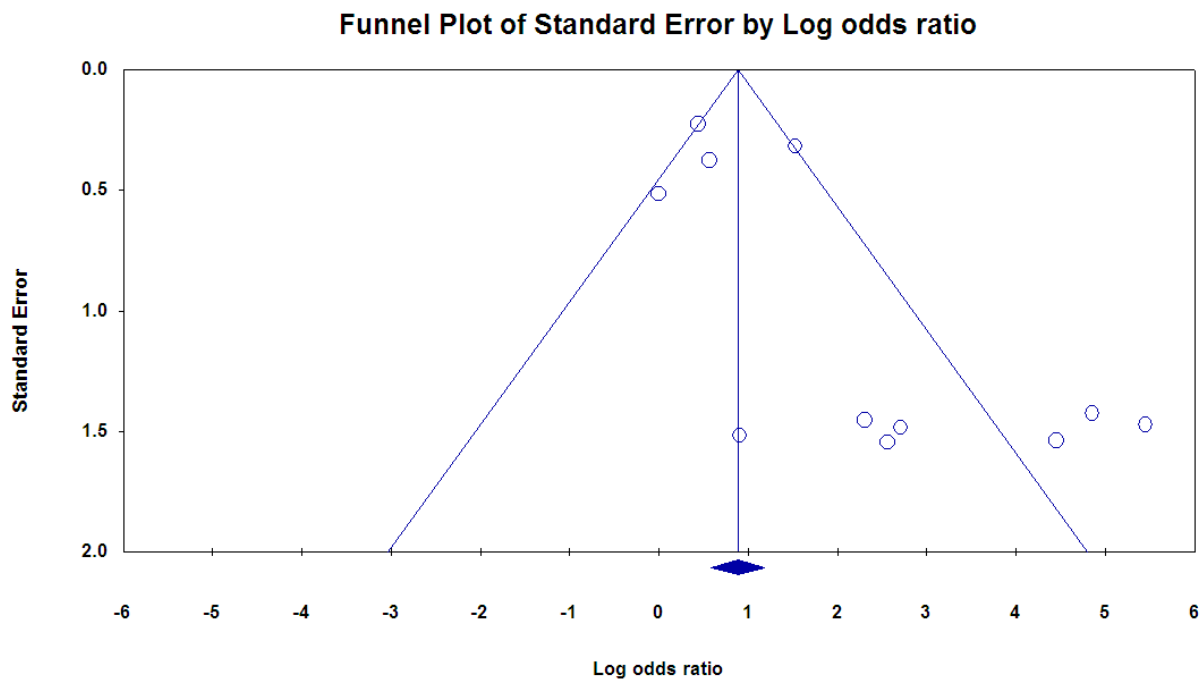### Funnel Plot of Standard Error by Log odds ratio

Figure1. Funnel Plot of Standard Error by Log odds ratio